

JUN -- 09/750,221
Client/Matter: 082123-0275721

IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1.-5. (Canceled)

6. (Currently amended) ~~An apparatus, for use with an~~ A CMOS image sensor having an array of unit pixels, each of which outputs digital image data corresponding to one or more characteristics of light incident thereon, for detecting and compensating for a defective pixel, comprising:

a defective pixel detection circuit constructed and arranged to determine whether or not a target pixel corresponding to one of the pixels is defective based on a check condition, wherein the check condition is whether a value of the target pixel is larger than a first value, which multiplies a first coefficient by a maximum value of adjacent normal pixels, or smaller than a second value, which multiplies a second coefficient by a minimum value of adjacent normal pixels; and

a compensation circuit constructed and arranged to compensate the image data of a target pixel deemed to be defective and output compensated image data, wherein the defective pixel detection circuit includes:

a first line memory for storing therein the image data fed thereto from the unit pixel on a line-by-line basis;

a second line memory for receiving the image data stored in the first line memory and storing the same therein; and

a 3 x 3 two-dimension space filter for receiving the image data fed thereto from ~~[[a]] the second line memory, the image data inputted into the second line memory thereto from [[a]] the first line memory[[.]] and the image data provided to the first line memory thereto from each the unit pixel on a line-by-line basis,~~ and respectively storing each of the digital image data in a first set of lines, a second set of lines, and a third set of lines.

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7. (Currently amended) ~~An apparatus~~ A CMOS image sensor according to claim 6, wherein the defective pixel detection circuit further comprises:

a defective pixel determination circuit constructed and arranged to receive the image data provided thereto from the space filter, determine whether or not image data of a target pixel is defective based on the check condition, and output a defective pixel determination signal, a minimum range violation signal and a maximum range violation signal according to determined results, wherein the defective pixel determination signal represents that the image data of the target pixel has a value larger than ~~a first coefficient times a maximum~~ the first ~~value of image data of adjacent normal pixels in the space filter,~~ or a value smaller than ~~a second coefficient times a minimum~~ the second ~~value of image data of adjacent normal pixels in the space filter,~~ the maximum range violation signal representing that the image data of the target pixel has a value larger than ~~the first coefficient times the maximum~~ value; and the minimum range violation signal representing that the image data of the target pixel has a value smaller than ~~the second coefficient times the minimum~~ value.

8. (Currently amended) ~~An apparatus~~ A CMOS image sensor according to claim 7, wherein the defective pixel compensation circuit includes:

combining logic constructed and arranged to combine the minimum range violation signal and the maximum range violation signal provided thereto from the defective pixel detection circuit;

a first selector constructed and arranged to selectively output the minimum value of image data or the maximum value of image data in response to output from the combining logic; and

a second selector constructed and arranged to select one of the output signals from the first selector and the image data of the target pixel, in response to the defective pixel determination signal from the defective pixel determination circuit, and output the same as the compensated image data, wherein

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if the image data of the target pixel has a value larger than the first ~~coefficient~~
~~times the maximum image data value~~ and is determined as the defective pixel, the maximum
value of image data is outputted as the compensated image data; and

if the image data of the target pixel has a value smaller than the second
~~coefficient times the minimum image data value~~ and is determined as the defective pixel, the
minimum value of image data is outputted as the compensated image data; and

the defective pixel determination signal represents that the target pixel is
defective and the minimum or maximum range violation signals represent that the image data
of the defective pixel violates the maximum or minimum ranges in the check condition,
which are provided thereto from the defective pixel detection circuit.

9. (Currently amended) ~~An apparatus~~ A CMOS image sensor according to claim 8,
wherein the first and the second coefficients are selected based on process characteristics of
the image sensor.

10. (Currently amended) ~~An apparatus~~ A CMOS image sensor according to claim 8,
wherein the first and the second coefficients are 1.1 and 0.9, respectively.

11.-12. (Canceled)